Response to **Anonymous Referee #1**
We thank the reviewer for the valuable comments which are addressed below.

Comment: Melting process occurs on the snow surface. Like the drilling was stopped because reaching water table at 50m depth, the assumption that percolation is reduced because some refreezing layers were observed is not validated. Refreezing layers may originate from surface melting/refreezing processes when the lower temperature follows. However, during the warmest period of the year, water percolation will flow through the whole firn down to deep permeable layer. This deep percolation is not crucial for the isotopic profile as long as the refreezing does not mix the layers, as you previously observed on Chimborazo (Ginot et al., 2010).

Response: *We cannot totally exclude deep percolation through the entire firn layer, but we think this process was probably constrained by the presence of impermeable ice layers. We did not encounter a water table, but only small amounts of liquid water. Also the radar data collected on site were not clear enough to see a continuous internal layer associated to a possible water table. Concentration records of major ions support the assumption of limited melt. They are preserved in the upper part (years 2006-2003, corresponding to 0-22 m weq depth) and influenced by percolation only in the lower part. In the preserved part, sea salt components* Na^{+}, Cl^{-}, Mg^{2+}, *and* SO_4^{2-} *are significantly correlated (r between 0.60 and 0.92 for logarithmic values) and show the expected seasonality with peaks in austral winter related to higher wind speeds in the source area. As example the Na+ concentration record is added to Fig. 4 of the revised version.*

Comment: In the ice core analyses procedure, you say that major ions were analysed. However, in the manuscript, chemical profiles were not presented and discussed. Whether these chemical profiles are preserved or disturbed by water percolation, these results can support the isotopic profiles quality.

Response: *We added the Na+ concentration record to Fig. 4 in the revised version as example.*

Comment: Concerning to the net accumulation amount deduced from the firn core, the value correspond to the accumulation on the drilling site (ice core top) and upward the flow line (deeper along the core). The snow accumulation measured from the stake network shows a high variability, from lower accumulation upwards to higher accumulation downwards, and measurement were only taken during the drilling campaign. The high values downward may results from deposition of drifted snow upwards, everything related to surface topography, wind and snow quality. In that case, the value is not “the lower limit”. I would not conclude to accumulation rate variation from this record, as the deposition processes may change from one year to another, but only use it as qualitative information on stable isotopes like layers from each seasons should be preserved at least.

Response: The dominant wind direction is west, preventing snow drift from the drilling site downwards (to the southwest). Thus, snow drift cannot explain the higher accumulation observed at the stakes below the drilling site. On the contrary, snow erosion occurs near the ridge (towards northeast). This is the reason why we consider the accumulation rates at the drilling site as lower limit. Since there are very few published accumulation data from the SPI we think our estimation for this location is very valuable.